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United States Department of Agriculture.

OFFICE OF THE SECRETARY—Circular No. 26.

THE ADULTERATION AND MISBRANDING OF ALFALFA, RED CLOVER, AND GRASS SEEDS.

During the calendar year 1907 seed of agricultural plants was obtained in the open market in accordance with the following paragraph in the act of Congress making appropriations for the Department of Agriculture:

The Secretary of Agriculture is hereby directed to obtain in the open market samples of seeds of grass, clover, or alfalfa, test the same, and if any such seeds are found to be adulterated or misbranded, or any seeds of Canada bluegrass (*Poa compressa*) are obtained under any other name than Canada bluegrass or *Poa compressa*, to publish the results of the tests, together with the names of the persons by whom the seeds were offered for sale.

In carrying out the provisions of this act, seed of red clover, alfalfa, meadow fescue, *Bromus inermis*, and Kentucky bluegrass was secured and analyzed, and publication is here made of the analyses of those samples found to be adulterated or misbranded, together with the names of the seedsmen by whom they were offered for sale.

RED CLOVER.

Of the 1,217 samples of red clover seed secured, 405, or one-third, contained seed of dodder, 424 contained traces of yellow trefoil seed, and 135 bore evidence of having originated in Chile.

TABLE I.—Results of tests of samples of seed obtained in the open market as red clover seed and found to be adulterated or misbranded.

Seed offered for sale as red clover by—		Seeds not red clover.
Name.	Address.	
J. J. Funk.....	Fremont, Nebr.....	<i>Per ct.</i>
Do.....	do.....	^a 23.47
Do.....	do.....	^b 21.00
Do.....	do.....	^a 27.27
Do. ^c	do.....	^a 18.47
Jul. Petersen.....	709 Carroil street, St. Louis, Mo.....	^a 20.00

^a Green foxtail and German millet.
^b Green foxtail.

^c Purchase sample.
 Buckhorn.

ALFALFA.

Of the 399 samples of alfalfa seed secured, 191, or about one-half, contained seed of dodder, 135 contained a trace of yellow trefoil seed, 120 contained a trace of sweet clover seed, and 16 contained a trace of bur clover seed.

TABLE II.—Results of tests of samples of seed obtained in the open market as alfalfa seed and found to be adulterated.

Seed offered for sale as alfalfa by—		Seeds not alfalfa.			
Name.	Address.	Dod- der.	Yellow trefoil.	Sweet clover.	Bur clover.
Caughey & Carran.....	620 Chamber of Commerce, Detroit, Mich.	<i>Per ct.</i> Yes.	<i>Per ct.</i> Trace.	<i>Per ct.</i>	<i>Per ct.</i> 8.34
Thos. J. Grey & Co.....	32 South Market street, Boston, Mass.	No.	8.17	Trace.	1.41
Plymouth Hardware and Lumber Co.	New Plymouth, Idaho.....	1.28	.....	6.06	.....
Providence Seed Co.....	Providence, R. I.....	Yes.	11.29	Trace.	Trace.

MEADOW FESCUE.

Of the 64 samples of meadow fescue seed obtained, 20 contained chess in amounts varying from a trace to more than 19 per cent, 4 contained seed of rye-grass, 4 were misbranded, being Canada blue-grass, 1 was misbranded, being orchard grass, and another was misbranded, being a mixture of orchard grass and fescue.

TABLE III.—Results of tests of samples of seed obtained in the open market as meadow fescue seed and found to be adulterated or misbranded.

Seed offered for sale as meadow fescue by—		Seeds not meadow fescue.		
Name.	Address.	Chess.	Rye- grass.	Other seeds.
N. J. Burt & Co.....	108 Main street, Burlington, Iowa.....	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
Eugene Donzelot & Son.....	1618 South Main street, St. Louis, Mo.....	19.62	2.76	^a 100
Do. ^b	do.....	7.93	.....	.....
Grand Junction Seed Co.....	Grand Junction, Colo.....	Trace.	8.05	.....
J. W. Moore ^b	Anna, Ill.....	.....	.....	^a 100
Chas. E. Prunty.....	7 South Main street, St. Louis, Mo.....	16.44	2.64	.....
Do. ^b	do.....	19.22	2.74	.....
Ratekin's Seed House.....	Shenandoah, Iowa.....	.....	.....	^c 92.65
H. A. Robinson Grain Co.....	Colorado Springs, Colo.....	.....	.....	^d 71.39
St. Louis Seed Co.....	615 North Fourth street, St. Louis, Mo.....	8.82	.....	.....
C. Young & Sons Co.....	1406 Olive street, St. Louis, Mo.....	.....	.....	^a 100
Do.....	do.....	.....	.....	^a 100

^a Canada bluegrass.
^b Purchase sample.

^c Orchard grass, 70.7 per cent; Festuca sp., 21.95 per cent.
^d Orchard grass.

BROMUS INERMIS.

Of the 55 samples of *Bromus inermis* seed obtained, 15 contained seed of cheat, or chess, 28 contained from 2 to 3 per cent of seed of the wheat-grasses, several contained seed of meadow fescue, and one contained more than 24 per cent of meadow fescue and rye-grass seed together.

TABLE IV.—Results of tests of samples of seed obtained in the open market as *Bromus inermis* seed and found to be adulterated or misbranded.

Seed offered for sale as <i>Bromus inermis</i> by—		Seeds not <i>Bromus inermis</i> .	
Name.	Address.	Cheat.	Meadow fescue.
		<i>Per ct.</i>	<i>Per ct.</i>
O. J. Barnes Co.....	Grand Forks, N. Dak.....	3.33	12.43
Andrew Bather.....	222 Fifth avenue, Clinton, Iowa.....	5.44	1.39
Grand Junction Seed Co.....	Grand Junction, Colo.....	1.72	9.08
Jameson, Hevener & Griggs.....	181 East Sixth street, St. Paul, Minn.....	2.68	18.99
J. G. Peppard.....	Kansas City, Mo.....	3.59	12.02
Winona Seed Co.....	110 Center street, Winona, Minn.....	4.86	24.33

^a Includes rye-grass as well as meadow fescue.

KENTUCKY BLUEGRASS.

Of the 429 samples of Kentucky bluegrass seed obtained, only 8 were found to be free from any trace of Canada bluegrass. In most of these samples the trace of Canada bluegrass found was immature seed, showing that it was harvested with the Kentucky bluegrass seed. The seeds of the two plants not ripening at the same time, it is improbable that mature seed of Canada bluegrass would be harvested with Kentucky bluegrass seed. In 110 samples, however, Canada bluegrass seed was found in quantities exceeding 5 per cent, 32 of these being Canada bluegrass seed misbranded as Kentucky bluegrass seed.

TABLE V.—Results of tests of samples of seed obtained in the open market as Kentucky bluegrass seed and found to be adulterated or misbranded.

Seed offered for sale as Kentucky bluegrass by—				Seeds found, including adulterants.		
Name.	Address.	Mark on sample.	Sample obtained by—	Kentucky bluegrass.	Canada bluegrass.	Other seeds.
				<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>
American Seed Co..	398 East High street, Detroit, Mich.	Fancy cleaned choice Kentucky bluegrass.	Purchase.	32.08	20.02	^a 20.89
P. F. Arney.....	14 South First ave., Marshalltown, Iowa.	Kentucky bluegrass	Mail.....	2.4	97.6	.....
Do.....	do.	do.	Purchase.	Trace.	100	.....
Bad Axe Grain Co..	Bad Axe, Mich.	XX Kentucky bluegrass.	Mail.....	5.72	35.48	^b 19.56
Do.....	do.	do.	Purchase.	4.43	35.89	^c 19.85
O. J. Barnes Co.....	Grand Forks, N. Dak.	Kentucky bluegrass	Mail.....	Trace.	100	.....
Andrew Bather.....	222 Fifth avenue, Clinton, Iowa.	Bluegrass	do.	1.3	98.7	.....
Blackman & Griffith Co.	Ogden, Utah.	Kentucky bluegrass	Purchase.	60	40	.....
A. D. Bohannon..	Anna, Ill.	Bluegrass	Mail.....	1	99	.....
Do.....	do.	do.	Purchase.	22.3	77.7	.....
Broadway Floral Co.	Everett, Wash.	do.	do.	Trace.	100	.....
Do.....	do.	Kentucky bluegrass	Mail.....	Trace.	100	.....
Browder & Browder.	Albion, Nebr.	Extra fancy	do.	63.22	5.35	^d 18.93
Do.....	do.	do.	Purchase.	66	34	.....
A. J. Brown Seed Co.	Grand Rapids, Mich.	do.	do.	Trace.	Trace.	^d 79.5
Fred P. Burr & Co.	114 Main street, Middletown, Conn.	Genuine Kentucky bluegrass.	Mail.....	Trace.	100	.....
Do.....	do.	do.	Purchase.	Trace.	100	.....

^a Redtop and timothy.

^b Wood meadow grass and timothy.

^c Wood meadow grass, timothy, and redtop.

^d Redtop.

TABLE V.—Results of tests of samples of seed obtained in the open market as Kentucky bluegrass seed and found to be adulterated or misbranded—Continued.

Seed offered for sale as Kentucky bluegrass by—				Seeds found, including adulterants.		
Name.	Address.	Mark on sample.	Sample obtained by—	Kentucky bluegrass.	Canada bluegrass.	Other seeds.
D. V. Burrell.....	405 North Main street, Rocky Ford, Colo.	Kentucky bluegrass	Mail.....	<i>Per ct.</i> Trace.	<i>Per ct.</i> 100	<i>Per ct.</i>
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
Cannon Floral and Seed Co.....	Lafayette, Colo.....	Strictly high-grade Government test Kentucky bluegrass.	Mail.....	44.9	55.1	.....
Do.....	do.....	do.....	do.....	43.1	56.9	.....
Do.....	do.....	do.....	Purchase.....	27.3	72.7	.....
Do.....	do.....	do.....	do.....	18.2	81.8	.....
Carthage Seed Co.....	Carthage, Mo.....	Kentucky bluegrass	Mail.....	Trace.	100	.....
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
Charleston Nursery and Seed Co.....	29 Alderson street, Charleston, W. Va.	Fancy Kentucky bluegrass.	Mail.....	47.3	52.7	.....
I. Shelby Crall Co.....	251 Main street, Monongahela, Pa.	Kentucky bluegrass	do.....	46.3	53.7	.....
Do.....	do.....	do.....	Purchase.....	62.7	37.3	.....
Do.....	do.....	do.....	do.....	65.4	34.6	.....
R. B. Dunning & Co.....	54 Broad street, Bangor, Me.	Fancy Kentucky bluegrass.	Mail.....	Trace.	100	.....
Everett & Treadwell Co.....	534 Broadway, Kingston, N. Y.	Kentucky bluegrass	do.....	29.8	70.2	.....
Do.....	do.....	do.....	Purchase.....	21.3	78.7	.....
Farmer Seed Co.....	Faribault, Minn.....	Fancy Kentucky bluegrass.	Mail.....	49.5	50.5	.....
Do.....	do.....	do.....	Purchase.....	44.2	55.8	.....
Ford Seed Co.....	Ravenna, Ohio.....	Fancy Kentucky bluegrass.	Mail.....	54.7	45.3	.....
Do.....	do.....	do.....	Purchase.....	66.5	33.5	.....
German Nurseries and Seed Co.....	Beatrice, Nebr.....	do.....	do.....	54	46	.....
H. W. Gordinier.....	357 River street, Troy, N. Y.	Bluegrass.....	Mail.....	Trace.	100	.....
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
Grand Junction Seed Co.....	Grand Junction, Colo.....	do.....	Mail.....	60.7	39.3	.....
Thomas J. Grey & Co.....	32 South Market street, Boston, Mass.	Kentucky bluegrass	do.....	82.7	17.3	.....
Griswold Seed Co.....	Lincoln, Nebr.....	do.....	do.....	49.42	Trace.	^a 34.13
Helmer Milling Co.....	14 Fourth street, Fond du Lac, Wis.	Bluegrass.....	Mail.....	Trace.	100	.....
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
Heman Glass Seed Co.....	Rochester, N. Y.....	Bluegrass.....	Mail.....	60.6	39.4	.....
Do.....	do.....	do.....	Purchase.....	49.6	50.4	.....
R. A. Holden & Co.....	46 Main street, Cincinnati, Ohio.	Export fancy bluegrass.	Mail.....	49	51	.....
Do.....	do.....	do.....	Purchase.....	58.5	41.5	.....
Huntington & Page.....	Indianapolis, Ind.....	do.....	Mail.....	73.96	Trace.	^b 26.04
Do.....	do.....	do.....	Purchase.....	66.28	6.4	^b 19.73
A. C. Kendel.....	115 Ontario street, Cleveland, Ohio.	Bluegrass.....	Mail.....	68.9	31.1	.....
Do.....	do.....	do.....	Purchase.....	71.6	28.4	.....
Irving Kester Seed Co.....	103 Main street, Buffalo, N. Y.	Fancy bluegrass.....	Mail.....	Trace.	100	.....
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
Jones & Isham.....	Burlington, Vt.....	Kentucky bluegrass	Mail.....	77.7	22.3	.....
Do.....	do.....	do.....	Purchase.....	70.9	29.1	.....
Lee Pioneer Seed Co.....	1549 Wazee street, Denver, Colo.	Fancy Kentucky bluegrass.	Mail.....	94.62	5.38	.....
Jonathan Levi & Co.....	Schenectady, N. Y.....	Bluegrass.....	do.....	Trace.	100	.....
Do.....	do.....	do.....	Purchase.....	Trace.	100	.....
R. B. Liles Grain Co.....	21 South Cascade avenue, Colorado Springs, Colo.	Kentucky bluegrass	Mail.....	63	37	.....
Do.....	do.....	do.....	Purchase.....	70.1	29.9	.....
Chas. H. Lilly Co.....	Seattle, Wash.....	Kentucky bluegrass	Mail.....	Trace.	100	.....
McKay, Reece & Co.....	24 Second avenue, N., Nashville, Tenn.	Choice Kentucky bluegrass	do.....	88.3	11.7	.....
Michael's Seed Store.....	316 Pearl street, Sioux City, Iowa.	Kentucky bluegrass	do.....	42.3	57.7	.....
Do.....	do.....	do.....	Purchase.....	49.8	50.2	.....

^a Redtop and timothy.^b Timothy.

TABLE V.—Results of tests of samples of seed obtained in the open market as Kentucky bluegrass seed and found to be adulterated or misbranded—Continued.

Seed offered for sale as Kentucky bluegrass by—				Seeds found, including adulterants.		
Name.	Address.	Mark on sample.	Sample obtained by—	Kentucky bluegrass.	Canada bluegrass.	Other seeds.
Moore's Main Street Store.	Anna, Ill.	.....	Mail.	<i>Per ct.</i> 2.1	<i>Per ct.</i> 97.9	.....
Do.	do.	.....	Purchase.	1.2	98.8	.....
W. H. Morehouse & Co.	Toledo, Ohio.	Fancy Kentucky bluegrass.	Mail.	60.9	39.1	.....
Do.	do.	Pure Kentucky bluegrass.	do.	65.2	34.8	.....
Do.	do.	.....	Purchase.	69.3	30.7	.....
Jas. C. Murray.	Peoria, Ill.	.....	do.	39	61	.....
Wm. L. Noyes.	4 East Genesee street, Auburn, N. Y.	Fancy Kentucky bluegrass.	Mail.	57.4	42.6	.....
Do.	do.	.....	Purchase.	46.5	53.5	.....
Paxson Seed Store.	228 South Michigan street, South Bend, Ind.	.....	do.	Trace.	Trace.	^a 84.77
Do.	do.	.....	Mail.	Trace.	Trace.	^a 86.57
Wilford Perry.	208 West Center street, Provo, Utah.	Bluegrass.	do.	47.4	52.6	.....
Do.	do.	.....	Purchase.	59	41	.....
Plant Seed Co.	814 North Fourth street, St. Louis, Mo.	Standard bluegrass	Mail.	52.4	47.6	.....
Do.	do.	.....	Purchase.	58.9	41.1	.....
Providence Seed Co.	6 Exchange place, Providence, R. I.	Kentucky bluegrass	Mail.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
Puget Sound Nursery and Seed Co.	Second avenue and Pike street, Seattle, Wash.	Bluegrass.	Mail.	Trace.	100	.....
D. L. Ramsey.	33 Market street, Auburn, N. Y.	do.	do.	62.69	37.31	.....
Rockford Seed Co.	Rockford, Ill.	Thoroughbred bluegrass.	do.	68.6	31.4	.....
St. Louis Seed Co.	615 North Fourth street, St. Louis, Mo.	Strictly fancy Kentucky bluegrass.	do.	Trace.	100	.....
Do.	do.	Strictly choice Kentucky bluegrass.	do.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
B. B. Sanders & Co.	343 Broadway, Albany, N. Y.	Choice bluegrass.	Mail.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
Miss M. Schueren.	4453 Lorain avenue, Cleveland, Ohio.	Kentucky bluegrass	Mail.	51.2	48.8	.....
Do.	do.	.....	Purchase.	77.3	22.7	.....
Seattle Seed Co.	319 First avenue, S. Seattle, Wash.	Kentucky bluegrass	Mail.	51.4	48.6	.....
Do.	do.	.....	Purchase.	54.3	45.7	.....
Seberger Seed Co.	Crown Point, Ind.	Bluegrass.	Mail.	73.5	26.5	.....
Shugart-Ouren Seed Co.	Sixth street and Tenth avenue, Council Bluffs, Iowa.	Fancy bluegrass	do.	62.9	37.1	.....
Simpson Seed and Floral Co.	1551 Champa street, Denver, Colo.	Kentucky bluegrass	do.	56	44	.....
Do.	do.	do.	do.	34.1	41.7	^b 24.2
Do.	do.	do.	do.	Trace.	100	^b 100
Do.	do.	do.	do.	Trace.	100	.....
Do.	do.	do.	Purchase.	Trace.	100	.....
Strain Bros.	Lamar, Colo.	Bluegrass.	Mail.	18.1	81.9	.....
Do.	do.	.....	Purchase.	16.2	83.8	.....
A. G. Tillinghast.	La Conner, Wash.	Bluegrass.	Mail.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
Tinsley Seed Co.	912 North Broadway, St. Louis, Mo.	Fancy bluegrass.	Mail.	1.2	98.8	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
Rhody Toher.	Oneida, N. Y.	Kentucky bluegrass	Mail.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
James Vick's Sons.	Rochester, N. Y.	Bluegrass	Mail.	43.7	56.3	.....
D. W. Winston & Co.	Utica, N. Y.	.....	Purchase.	26.26	31.32	^c 25.34
Younkerman Seed Co.	Council Bluffs, Iowa.	Bluegrass	Mail.	25.1	74.9	.....
Do.	do.	.....	do.	Trace.	100	.....
Do.	do.	.....	Purchase.	Trace.	100	.....
C. Young & Sons.	1406 Olive street, St. Louis, Mo.	.....	Mail.	Trace.	100	.....
Do.	do.	.....	do.	56.5	43.5	.....
Do.	do.	.....	Purchase.	76.6	23.4	.....

^a Redtop and timothy.^b Festuca ovina.^c Redtop.

As has been previously stated in these publications, this Department will examine and report promptly as to the presence of adulterants and dodder in any samples of seed submitted for that purpose. Respectfully submitted.

B. T. GALLOWAY,
Chief, Bureau of Plant Industry.

Approved:

JAMES WILSON,
Secretary of Agriculture.

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